United States Environmental Protection Agency
Region 9
Technical Support Document

Navajo Generating Station
Salt River Project Agricultural Improvement and Power District
Navajo Nation Indian Reservation
Coconino County, Arizona

Refined Coal Treatment System
February 2016
Tribal Minor NSR Permit: T-0004-NN
(See also, PSD Permit No. AZ 08-01A)

In accordance with the requirements of the Tribal Minor New Source Review (NSR) Permit Program (see 40 CFR Part 49), EPA is proposing to approve a Federal permit to construct under authority of the Clean Air Act (CAA) for a Refined Coal Treatment System (RCTS) at the Navajo Generating Station (NGS). This Technical Support Document (TSD) describes the equipment that is authorized to be installed and the additional permit conditions that will be added to the existing PSD permit as a result of this minor NSR permit action.

The final section of the TSD provides information for submitting comments on the proposed minor NSR permit to authorize construction and operation of the RCTS.

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I. Facility Description

NGS is a participant owned coal-fired generating station managed by Salt River Project Agricultural Improvement and Power District (SRP). The co-owners of NGS are the U.S. Bureau of Reclamation (24.3% ownership), Los Angeles Department of Water and Power (21.2%), SRP (21.7%), Arizona Public Service Co. (14.0%), NV Energy (11.3%), and Tucson Electric Power Co. (7.5%). Los Angeles Department of Water and Power and NV Energy anticipate selling their ownership shares of the plant in the near future. NGS is located on the Navajo Nation about 5 miles east of Page, Arizona in Coconino County. Coconino County is currently classified as attainment or unclassifiable for all National Ambient Air Quality Standards (NAAQS) pollutants (see 40 CFR 81.303).

Facility Location:
Sec 2 T40N R9E
Latitude: 36.903135 N
Longitude: -111.390242 W
Coconino County, Arizona

NGS currently consists of three 750 megawatt (MW) coal-fired electric steam-generating units (EGUs), designated as Units 1, 2 and 3, with a total capacity of approximately 2,250 MW, and other ancillary equipment such as coal storage and transferring, coal pulverizing, lime handling operations, and dry ash handling operations. As discussed in detail below, this current minor NSR permit action proposes to authorize installation of additional equipment called the Refined Coal Treatment System (RCTS).

II. Refined Coal Treatment System Project Description

On February 20, 2015, EPA received an application from SRP for a minor NSR permit allowing construction and operation of the RCTS within the plant boundaries on pre-disturbed land at NGS. The permit would authorize SRP to construct and operate the RCTS, including ancillary equipment, in order to treat coal with cement kiln dust and calcium bromide for the further reduction of oxides of nitrogen (NO_x) and mercury emissions, respectively, and thus, to take advantage of a federal tax credit. SRP has an existing coal conveyor belt system that transfers untreated coal from railcar unloading piles to the pulverizers for crushing. The crushed coal is then fed into one of three existing boilers (Units 1, 2 or 3) for combustion to generate steam and produce electricity. SRP is proposing to construct the RCTS to add calcium bromide and cement kiln dust (CKD) to the coal prior to being pulverized and combusted. The RCTS will consist of two new coal feed belt conveyors that will divert coal from the existing conveyor system to two new mixing pugmills where the coal will be mixed with the additives (calcium bromide and CKD). The treated coal will then be fed back from the pugmills into the existing conveyor system on two new return belt conveyors. The CKD will be delivered by truck and stored in three new 150 ton silos and two new 20 ton day bins. The calcium bromide will also be delivered by truck and will be stored in a new 8,700 gallon storage tank and two new 405 gallon day tanks.

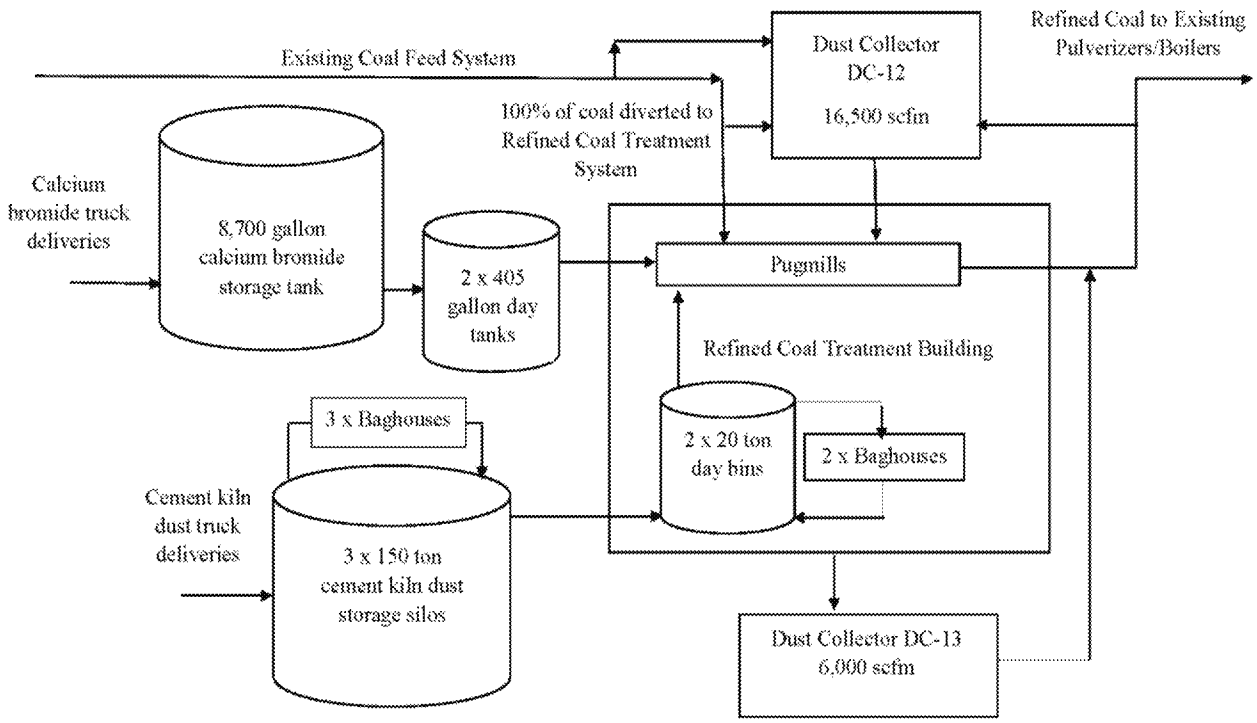
Emissions controls will be installed on the new equipment for the RCTS. The transfer points at the new and existing belt conveyors associated with the RCTS will be controlled by two high efficiency dust collectors. The CKD silos and day bins will be controlled by baghouses inherent to each storage device. The baghouses are inherent to the silos and day bins because they help recover CKD and keep the containers under negative pressure, preventing losses of CKD to the atmosphere through any potential leaks. The baghouses would be present on the silos and day bins solely for material recovery even if there were no need to install air pollution controls. There are no control devices associated with

calcium bromide storage or application because it is not volatile will be stored and applied to the coal as a liquid.

The RCTS will result in emissions increases in PM, PM_{10}, and $PM_{2.5}$. The emissions increases are primarily from increased truck delivery traffic on existing unpaved roads at NGS, and to a lesser extent from the new dust collectors to be installed on the belt conveyors and new baghouses associated with CKD storage silos and day bins. There will be no emission increases associated with the storage and transfer of calcium bromide. In addition, there will be minimal increases in emissions of PM, PM_{10}, and $PM_{2.5}$ from Units 1, 2, and 3 due to the increased ash content of the coal following the application of CKD (See Section V below for a summary of the emissions increases). However, the increase in emissions from Units 1, 2, and 3 will not result in changing the permitted emissions limits for the EGUs.

The construction and operation of the RCTS will be within the existing footprint of NGS and the increase in emissions from the changes will not exceed the PSD significance thresholds. Therefore, the RCTS does not trigger PSD. The increases in PM and PM_{10} emissions from the proposed RCTS, however, are above the Tribal NSR minor source thresholds for attainment areas. Increases in $PM_{2.5}$ emissions are below Tribal NSR minor source thresholds. As described below, the RCTS qualifies as a minor NSR project, pursuant to 40 CFR 49.153(a)(1).

Figure 1 – Process Flow Diagram of Refind Coal Treatment System



A. *New Coal Feed Belt Conveyors*

As discussed above, two new coal feed belt conveyors will be installed to deliver the coal to the RCTS and particulate matter emissions will be controlled from the coal feed belt conveyors by two dust collectors. The maximum flowrate through the dust collector controlling the main transfer points of coal (see DC-12 in the schematic above) will be 16,500 standard cubic feet per minute (scfm). The maximum flow rate through the dust collector controlling the particulate emissions from the RCTS building itself (see DC-13 in the schematic above) will be 6,000 scfm. Emissions from the dust collectors are based on a manufacturer's guaranteed emission factor of 0.01 gr/scf for standard filters. SRP is installing high-efficiency filters which guarantee an emission factor of 0.003 gr/scf. However, EPA is calculating the potential to emit for this project based on the use of standard dust collection filters. The coal and CKD collected by the dust collectors will be recovered and returned into the RCTS. The dust collectors are being installed primarily to recover product, but have a secondary benefit of providing air pollution control. Therefore, the dust collectors are considered inherent to the process and are taken into account in calculation of the potential emissions.

B. *Calcium Bromide Application*

The calcium bromide application system will consist of an 8,700 gallon storage tank, and two 405 gallon day tanks. Liquid calcium bromide will be delivered by truck to the 8,700 gallon storage tank, and then transferred as needed to the day tanks via transfer pumps. From the day tanks, calcium bromide will be applied to the coal directly and then the treated coal will be fed to the pulverizer prior to combustion in the boilers. The RCTS Project will consume approximately 45 gallons of calcium bromide per hour.

Calcium bromide is a non-volatile liquid and no air emissions are expected from the storage tanks or during the application to coal. However, the application of calcium bromide can help to oxidize elemental mercury in coal, which makes it easier to remove from particulate matter control devices. The RCTS Project will add calcium bromide to the coal in order to further reduce mercury emissions from Units 1, 2, and 3. The Mercury Control System discussed in Section III.B was constructed in order for NGS for comply with the Mercury and Air Toxics Standards (MATS) Rule. The RCTS Project is not necessary for compliance with the MATS rule. Rather, it is being constructed to take advantage of a federal tax credit which incentivizes production of refined coal for the reduction of mercury emissions.

C. *Cement Kiln Dust Application*

Cement Kiln Dust (CKD) is a byproduct of the cement industry which consists mostly of calcium carbonate (lime) and silicon dioxide. Application of CKD to coal prior to combustion can have the benefit of reducing emissions of NO_x from the combustion process. The RCTS Project will add CKD to the coal to further reduce NO_x emissions from Units 1, 2, and 3. The CKD application of the RCTS is also being constructed to take advantage of a federal tax credit which incentivizes production of refined coal for the reduction of NO_x emissions.

The CKD application system will consist of three 150 ton storage silos and two 20 ton day bins, each equipped with baghouses. The maximum flowrate through the baghouses connected to each of the

three 150 ton storage silos is 450 scfm. The maximum flowrate through each baghouse connected to the two day bins is 1,200 scfm.

CKD will be truck delivered into the main storage silos for bulk storage. From the storage silos, the CKD will be fed into the day bins and then through one of two screw conveyors to be mixed with the coal and calcium bromide in one of two pugmills. The mixture is then fed back into the existing conveyor system via two new return belts. The RCTS system will consume approximately 4 tons per hour of CKD.

Particulate matter emissions from the CKD application process are generated from the unloading of CKD into the storage silos and transfer of the CKD into the day bins. Baghouses to capture and control these particulate emissions are integral to the storage silos and day bins and thus will be operated at all times. Emissions from the storage silo and day bin baghouses are based on manufacturer guaranteed emission factors 0.00025 gr/scf and 0.002 gr/scf, respectively. The baghouses are added to the silos and day bins primarily to recover CKD and have the secondary benefit of providing air pollution control. Therefore, the baghouses are considered integral to the process and are taken into consideration in calculating potential emissions.

D. Additional Truck Traffic

The delivery of calcium bromide and CKD to NGS will cause an increase in fugitive particulate matter emissions from increased truck traffic. Emission calculations are based on AP-42 Section 13.2.2 information. The applicant included an assumed 75 percent control efficiency for road watering. However, given the difficulty in practice of achieving 75 percent control efficiency, we believe that a 50 percent control efficiency is more representative of dust control using water sprays on road. Thus, we used a 50 percent control efficiency in our potential to emit calculations. As discussed in the Control Technology Review Section below, we are adding permit conditions which will be sufficient to ensure 50 percent control efficiency of fugitive dust emissions from roadways.

The minor NSR permit will limit truck traffic for CKD deliveries to a maximum of 720 vehicle miles traveled (VMT) per year and a maximum of 70 VMT per year for calcium bromide deliveries. Calcium bromide deliveries for the existing Mercury Control System to NGS are 365 VMT per year. The additional 70 VMT for calcium bromide deliveries for the RCTS Project bring the total to 465 VMT per year.

E. Emission Increases from Existing Units 1, 2, and 3

The addition of CKD to the coal prior to combustion in existing Units 1, 2, and 3 will result in increased emissions of PM, PM_{10}, and $PM_{2.5}$ due to the increased ash content in the coal. Emission calculations of these emission increases are based on emission factors from AP-42 Section 1.1. The evaluation of emission increases were based on an actual to projected actual emissions test allowed for determining applicability of PSD and minor NSR consistent with requirements under NSR Reform. Coal feed rates used in the emission calculation were based on hourly averages for the 24-month time period between January 1, 2012 and December 31, 2013. It is not expected that the coal feed/combustion rates will change following construction of the RCTS project. Although the RCTS Project is expected to increase projected actual emissions of PM, PM_{10}, and $PM_{2.5}$ from Units 1, 2, and 3, the emissions increase is not major under the PSD program. There will be no change in any emission limits for any of the affected

units as the facility can accommodate the actual emissions change within their current emissions limit, and SRP will be required to comply with all existing emission limits in both the PSD and title V permits for Units 1, 2 and 3.

III. Existing Permits and Regulations Applicable to NGS

A. Existing PSD Permit

Currently, NGS has a PSD permit that was issued in late 2008 to allow installation of its Low NO_x Burner Project. The PSD permit authorized NGS to install Low NO_x Burners at each of its combustion boilers, Units 1, 2 and 3, in 2009 – 2011. Installation of the Low NO_x Burner technology resulted in a substantial decrease in NO_x emissions and an increase in emissions of CO that exceeded the PSD significance thresholds. The PSD permit established federally enforceable emissions limitations for NO_x and CO from Units 1, 2 and 3. The emissions limit for NO_x in the PSD permit is 0.24 lb/MMBtu on a 30-day rolling average and CO emissions must remain below 0.23 lb/MMBtu on a 30-day rolling average, and 0.15 lb/MMBtu based on a 12-month rolling average.

It is Region 9's practice to include the requirements from the PSD and Tribal Minor NSR program in a single permit document. As such, we are revising NGS's existing PSD permit, No. AZ 08-01A, to add the Tribal Minor NSR requirements of this action. This means that if we finalize our proposed authorization for NGS' RCTS Project we will revise the PSD permit to include the new equipment and add conditions to the permit associated with the addition of such equipment. NGS's Tribal Minor NSR permit number is T-0004-NN and that number will be added to PSD permit No. AZ 08-01A. All existing conditions in PSD permit No. AZ 08-01A remain unchanged by this action. The equipment being added at NGS pursuant to this minor NSR permit action will have no effect on the existing emission limits for any pollutants from Units 1, 2, and 3, including those limits and requirements established by the PSD permit and the Federal Implementation Plans described below.

B. August 2015 Administrative Amendment – Mercury Control System

On August 26, 2015, EPA approved an administrative amendment to PSD Permit No. AZ 08-01A called the "Mercury Control System". The administrative amendment authorized construction of a calcium bromide application system and a powdered activated carbon system within the existing facility footprint to reduce mercury emissions from Units 1, 2, and 3. The Mercury Control System was installed at NGS to ensure compliance with the emissions standards in the Mercury and Air Toxics Standards (MATS) rule. The project resulted in very small emission increases of particulate matter (PM, PM_{10}, and $PM_{2.5}$) from the powdered activated carbon system's storage silos and fugitive emissions due to increased VMT for truck traffic for deliveries of calcium bromide and powdered activated carbon. Emission increases due to the Mercury Control System were below the minor NSR thresholds in 40 CFR 49.153(a)(1)(ii)(A) and Table 1. Therefore, the change to the existing PSD permit was an administrative amendment, pursuant to 40 CFR 49.159(f).

Although the RCTS Project and the Mercury Control System projects are separate because they have different purposes, we have also evaluated the emissions increases together to determine if they would trigger any additional control requirements (e.g. PSD) if the two projects had been aggregated. The combination of increased emissions from the Mercury Control System approved under the August

2015 administrative amendment and the proposed RCTS Project will not exceed the PSD thresholds for any pollutant. As described below, only the Tribal NSR minor source thresholds for PM and PM_{10} are exceeded by the increases due to the RCTS Project, and no additional minor NSR or PSD thresholds would have been exceeded had the two projects been combined into one permitting action. Furthermore, the combination of increased emissions of $PM_{2.5}$ from the Mercury Control System and the RCTS Project do not exceed the Tribal NSR minor source threshold. However, when considering minor NSR and PSD applicability of future modifications at NGS, the increases in emissions for all pollutants from these two projects will be taken into account.

C. Federal Implementation Plans Promulgated Regulating NGS

NGS is currently subject to two Federal Implementation Plans regulating emissions from its operations. In 2010, EPA finalized a FIP establishing emissions limits for sulfur oxides (SO_x) and particulate matter. The FIP requires SO_x emissions to remain below 1.0 lb/MMBtu averaged over a 3-hour period plant-wide and particulate matter emissions were limited to 0.060 lb/MMBtu on a plantwide basis. This FIP also required dust suppression on the coal handling and storage operations and established a 20% opacity limitation on Units 1, 2 and 3, excluding condensed uncombined water droplets. See 40 CFR 49.5513(d).

In 2014, EPA finalized a FIP that included regulations requiring reductions in NO_x emissions as a "better-than-BART" alternative under the Regional Haze Rule to improve visibility in surrounding federal Class I areas. 79 Fed. Reg. 46,514 (Aug 8, 2014, codified at 40 CFR 49.5513(j)). The FIP contains regulations resulting in an 84% reduction in NO_x emissions when fully implemented.

D. Title V Operating Permit

EPA issued the first title V Operating permit to NGS on June 5, 2001. After Navajo Nation and SRP entered into a Voluntary Compliance Agreement on May 18, 2005 and EPA determined that it was appropriate to treat the Navajo Nation as a state, EPA delegated its title V Part 71 operating permit program to the Navajo Nation Environmental Protection Agency (NNEPA). See 69 FR 67578 and 71 FR 16773. When the Part 71 delegation was final on March 21, 2006, the NNEPA took over administration of the title V permit for NGS. NNEPA has issued one renewal of the title V operating permit on July 3, 2008. NNEPA provided notice of a draft title V Permit renewal for NGS in September 2015. NNEPA will incorporate the requirements of this minor NSR permit, if finalized, into the title V permit as an administrative amendment pursuant to 40 CFR 71.7(d)(1)(v).

E. Acid Rain Permit – 40 CFR Parts 72-77

EPA issued the first Phase II Acid Rain Permit under 40 CFR Part 72 on November 14, 1997. Units 1, 2, and 3 at NGS are listed under Part 72, and are therefore subject to the Acid Rain Program, which places limits for each emission unit on emissions of NO_x and SO_x. EPA typically issues Acid Rain Permits with each title V permit renewal. NNEPA provided public notice of the draft Acid Rain Permit renewal in September 2015.

IV. Tribal NSR Rule Permitting Requirements

The Tribal NSR Rule requires projects such as the RCTS at major stationary sources that cause a projected emissions increase above minor NSR thresholds to obtain a permit prior to commencing construction of the proposed project. See 40 CFR 49.153(a)(1). Based on the information submitted in SRP's application the RCTS Project qualifies for a minor NSR permit because the emission increases for PM and PM_{10} shown in Table 1 below are above the minor NSR thresholds and below EPA's PSD significance thresholds, as also shown in Table 1 below.

As discussed above, EPA is proposing to add new permit operating conditions to the existing PSD permit, pursuant to 40 CFR 49.151-161. The new permit conditions will limit the VMT travelled on existing unpaved roads for truck traffic associated with deliveries of CKD and calcium bromide to NGS. The limit on the number of VMT for truck traffic associated with calcium bromide deliveries has been updated to include the combination of existing deliveries and new deliveries to the RCTS. The limits on VMT for all truck deliveries of CKD and calcium bromide will be on a rolling 12-month basis. The permit will also contain other operational standards and associated monitoring and recordkeeping necessary to mitigate fugitive dust emissions from roadways, including requirements for watering and limiting the speed of truck delivery traffic.

New monitoring and recordkeeping requirements will also be added to the existing PSD permit for NGS pursuant to 40 CFR 49.151-161. SRP will be responsible for monitoring and recording the occurrence of each delivery of CKD and calcium bromide, the number of VMT associated with each delivery, and the total number of deliveries and VMT on a rolling 12-month basis. SRP will also be responsible for monitoring visible emissions from the dust collectors and baghouses which will be constructed as part of the RCTS Project. A weekly visible emissions survey is required to be conducted by a person trained in EPA Method 22 – *Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares*. If visible emissions are detected at any point during these surveys, SRP must take corrective action within 24 hours to ensure that no visible emissions are detectable. SRP will be responsible for properly operating and maintaining the baghouses and dust collectors, as well as keeping spare bags and filters on site for immediate replacement in the event of failure.

For more information on EPA's determination of new permit conditions, see the Control Technology Review Section below. In addition, we are also adding the email address for Region's 9 Air & TRI Enforcement Section to Section XI (Agency Notifications) of the permit. We consider the RCTS to constitute issuance of a minor NSR permit pursuant to 40 CFR 49.153(a)(1).

V. Summary of Emission Increases

Table 1 below summarizes the emission increases from this project and provides the applicable permitting thresholds for minor NSR and PSD. NGS is located in an area that is attainment or unclassifiable for all of the National Ambient Air Quality Standards. Therefore, this table reflects the permitting thresholds applicable in attainment areas. Table 1 demonstrates that the RCTS is above the minor NSR permitting thresholds and below the PSD thresholds.

Table 1 Refined Coal Treatment System Project Projected Emissions Increase

	Projected Emissions Increase (TPY)	Minor NSR Thresholds (TPY)	PSD Thresholds (TPY)
CO	0	10	100
NOx	0	10	40
SO2	0	10	40
VOC	0	5	40
PM	**14.96**	**10**	**25**
PM10	**10.15**	**5**	**15**
PM2.5	**0.75**	**3**	**10**
Lead	0	0.1	0.6
Fluorides	0	1	3
Sulfuric acid mist	0	2	7
Hydrogen sulfide	0	2	10
Total reduced sulfur	0	2	10
Reduced sulfur compounds	0	2	10
CO2e	0	NA	75,000

Table 2 shows the potential to emit for each new emissions unit and increases in the projected increases in actual emissions for each existing emissions unit for the RCTS Project.

Table 2 Potential to Emit for Each New Emissions Unit and Projected Increases in Actual Emissions for Existing Emission Units – Refined Coal Treatment System

New Emission Units – Potential to Emit	$PM_{2.5}$ (TPY)	PM_{10} (TPY)	PM (TPY)
DC-12: Coal Handling Dust Collection System, 16,500 scfm	0.33	6.19	6.19
DC-13: Coal Handling Dust Collection System, 6,000 scfm	0.12	2.25	2.25
DC-14: Cement Kiln Dust Silo 1, 450 scfm	< 0.01	< 0.01	< 0.01
DC-15: Cement Kiln Dust Silo 2, 450 scfm	< 0.01	< 0.01	< 0.01
DC-16: Cement Kiln Dust Silo 3, 450 scfm	< 0.01	< 0.01	< 0.01
DC-17: Cement Kiln Dust Day Bin 1, 1,200 scfm	< 0.01	0.09	0.09
DC-18: Cement Kiln Dust Day Bin 2, 1,200 scfm	< 0.01	0.09	0.09
TR-01: Truck Traffic on Existing Unpaved Roads for Cement Kiln Dust Delivery	0.05	0.53	2.05
TR-02: Truck Traffic on Existing Unpaved Roads for Calcium Bromide Delivery	< 0.01	0.04	0.14
Existing Emission Units – Projected Increases in Actual Emissions[1]			
U-1: Boiler 1	0.08	0.32	1.39
U-2: Boiler 2	0.08	0.31	1.33
U-3: Boiler 3	0.09	0.33	1.43
Totals	**0.75**	**10.15**	**14.96**

[1] – SRP used an actual-to-projected-actual applicability test to determine emission increases from existing Units 1, 2, and 3 for the purposes of minor NSR and PSD applicability. An actual-to-projected-actual test is allowed to determine NSR applicability for existing units pursuant to 40 CFR 52.21(a)(2)(iv)(c). New units which are proposed for construction as part of the RCTS Project are required to use potential to emit for minor NSR and PSD applicability purposes.

Table 3 demonstrates that the Mercury Control System added under an administrative amendment in August 2015 is below both the minor NSR and PSD major permitting thresholds. Table 4 shows the potential to emit for each new emissions unit. (See also, Region 9 Emission Calculations Spreadsheet)

Table 3 Mercury Control System Project Potential to Emit

	Projected Emissions Increase (TPY)	Minor NSR Thresholds (TPY)	PSD Thresholds (TPY)
CO	0	10	100
NOx	0	10	40
SO2	0	10	40
VOC	0	5	40
PM	**1.71**	**10**	**25**
PM10	**1.11**	**5**	**15**
PM2.5	**0.92**	**3**	**10**
Lead	0	0.1	0.6
Fluorides	0	1	3
Sulfuric acid mist	0	2	7
Hydrogen sulfide	0	2	10
Total reduced sulfur	0	2	10
Reduced sulfur compounds	0	2	10
CO2e	0	NA	75,000

Table 4 Potential to Emit for Each New Emissions Unit – Mercury Control System

Emission Unit	$PM_{2.5}$ (TPY)	PM_{10} (TPY)	PM (TPY)
Truck Traffic PAC Deliveries on Existing Unpaved Roads	< 0.01	0.02	0.08
Truck Traffic Calcium Bromide Deliveries on Existing Unpaved Roads	0.02	0.19	0.72
PAC Storage Silo A	0.45	0.45	0.45
PAC Storage Silo B	0.45	0.45	0.45
Totals	**0.92**	**1.11**	**1.71**

Table 5 demonstrates that the combination of the Refined Coal Treatment System added under this minor NSR permit and the Mercury Control System added under an administrative amendment in August 2015 are together above the minor NSR thresholds and below the PSD thresholds.

Table 5 Emissions Increases for Refined Coal Treatment and Mercury Control Systems Combined

	Combined Projected Emissions Increase (TPY)	Minor NSR Thresholds (TPY)	PSD Thresholds (TPY)
CO	0	10	100
NOx	0	10	40
SO2	0	10	40
VOC	0	5	40
PM	**16.67**	**10**	**25**
PM10	**11.26**	**5**	**15**
PM2.5	**1.67**	**3**	**10**
Lead	0	0.1	0.6
Fluorides	0	1	3
Sulfuric acid mist	0	2	7
Hydrogen sulfide	0	2	10
Total reduced sulfur	0	2	10
Reduced sulfur compounds	0	2	10
CO2e	0	NA	75,000

VI. Air Quality Impact Analysis

The Tribal Minor NSR regulations at 40 CFR 49.154(d) require that an Air Quality Impact Assessment (AQIA) modeling analysis be performed if there is reason to ensure that new construction will not cause or contribute to a NAAQS or PSD increment violation. Modeling must be performed consistent with procedures outlined in 40 CFR Part 51, Appendix W. If an AQIA reveals that the proposed construction could cause or contribute to a NAAQS or PSD increment violation, such impacts must be addressed before a pre-construction permit can be issued.

The proposed RCTS Project at NGS will result in increased emissions of PM, PM_{10}, and $PM_{2.5}$. Although all emission increases due to the proposed project are below PSD thresholds, increases in PM and PM_{10} exceed minor NSR permitting thresholds. An AQIA for PM is not required because there is no longer a NAAQS for PM. A primary and secondary NAAQS exists for PM_{10}, therefore, impacts due to PM_{10} are being analyzed to ensure that they do not contribute or cause any impacts on the annual and 24-hour PM_{10} NAAQS or a PSD increment violation.

SRP conducted a PM_{10} and $PM_{2.5}$ modeling analysis for the RCTS Project to determine the impact of emissions increases on the annual and 24-hour PM_{10} and $PM_{2.5}$ NAAQS. The modeling protocol outlined in 40 CFR Part 51, Appendix W entails two major steps: a Significant Impact Analysis and a Full Impact

Analysis. A Significant Impact Analysis considers the emissions associated with the proposed project to determine the air quality impacts on the surrounding area by comparing the modeled impacts using meteorological data from the past five years to the established Significant Impact Levels (SILs) (see table 6). SILs indicate the level at which emissions of a pollutant are likely to impact the NAAQS. If the modeled impacts from the proposed project are found to exceed the SILs, a Full Impact Analysis (including impacts on both the NAAQS and PSD increments) must be performed.

Table 6 Significant Impact Analysis Results for RCTS Project

Pollutant	Averaging Period	Maximum Modeled Ground-level Concentration[2] ($\mu g/m^3$)	SILs ($\mu g/m^3$)
PM_{10}	Annual	0.60	1
	24-hour	4.24	5
$PM_{2.5}$	Annual	0.04	0.3
	24-hour	0.23	1.2

[2] – The modeling protocol in 40 CFR Part 51, Appendix W allows the use of five years of off-site meteorological data or at least one year of on-site data. For this modeling analysis, five years of surface data from the nearby Page Municipal Airport and upper air data from Flagstaff, AZ were processed to generate meteorological data which could be used in the model. The highest five-year modeled value was used as the maximum modeled ground-level concentration at the NGS facility fence line.

The AQIA submitted by SRP showed that maximum concentrations of PM_{10} and $PM_{2.5}$ occur within the existing facility boundary and that increases of these pollutants due to the RCTS Project do not exceed the Significant Impact Levels (SILs) outside the facility boundary and do not result in ambient concentrations that exceed the NAAQS. SRP submitted a modeling report for $PM_{2.5}$ to demonstrate that $PM_{2.5}$ emissions from the RCTS Project are not expected to exceed the minor NSR threshold. Due to the fact that the $PM_{2.5}$ SILs were vacated in 2013, EPA guidance in the memorandum, "Guidance for $PM_{2.5}$ Permit Modeling", dated May 20, 2014, suggests that an alternative test can be conducted to determine if a Full Impact Analysis is required for $PM_{2.5}$. If the maximum modeled ground-level concentration is below the $PM_{2.5}$ SILs and the differences between the background concentrations and the NAAQS are greater than the $PM_{2.5}$ SILs, a Full Impact Analysis would not be required. In this case, the difference between the background concentrations and the NAAQS are greater than the vacated $PM_{2.5}$ SILs for both the annual and 24-hour averaging periods (see table 7). Therefore, for the RCTS Project, a Full Impact Analysis is not required for PM_{10} or $PM_{2.5}$. Due to the fact that the emissions beyond the facility boundary are insignificant, it is not expected that the construction or operation of the proposed RCTS Project will have any adverse effect on ambient air quality.

Table 7 $PM_{2.5}$ Background Concentrations

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[3]	NAAQS ($\mu g/m^3$)	Difference between NAAQS and Background ($\mu g/m^3$)	SILs ($\mu g/m^3$)
$PM_{2.5}$	Annual	2.52	12	9.48	0.3
	24-hour	7.26	35	27.74	1.2

[3] – Annual background concentration is based on 3-year average of annual mean concentration for years 2010, 2011, and 2012. 24-hour background concentration is based on 3-year average of 98th percentile concentration for years 2010, 2011, and 2012. All background data was obtained from the Glen Canyon monitoring site operated by SRP approximately 6 miles west of the NGS facility.

VII. Control Technology Review

EPA is required to conduct a case-by-case control technology review (CTR) pursuant to 40 CFR 49.154(c) to determine the appropriate level of pollution control for each pollutant subject to a minor NSR permit. This case-by-case control technology review is used to establish emission limitations for the affected emissions units at the source. An emission limitation means a requirement established by the reviewing authority that limits the quantity, rate or concentration of emission of air pollutants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction and any design standard, equipment standard, work practice, operational standard, or pollution prevention technique.

As stated in 40 CFR 49.154(c), the case-by-case CTR considers the following four factors:

1. Local air quality conditions
2. Typical control technology or other emissions reduction measures used by similar sources in surrounding areas
3. Anticipated economic growth in the area
4. Cost-effective emission reduction alternatives

Our final determination is not limited to the review process described below and may consider any other relevant information related to the four CTR factors listed above.

A. Local Air Quality Conditions

The first step in the case-by-case CTR is to examine local air quality conditions and whether the proposed project is likely to have any effect on such conditions. The Air Quality Impact Analysis (AQIA) described in Section VI of this TSD outlines the process by which we determine whether the proposed project is likely to impact ambient air quality conditions. The area surrounding NGS is in attainment or unclassifiable for all National Ambient Air Quality Standards (NAAQS). The AQIA for the RCTS Project at NGS has shown that the expected emissions increases due to the project are under all applicable SILs. Therefore, the proposed permit action is considered to have insignificant local air quality concerns.

B. Anticipated Economic Growth in the Area

The second step in the case-by-case CTR process is to characterize the economic growth in the area by looking at population and population growth. If there is high population or population growth in an area, there may be some adverse impact on local ambient air quality.

The following data is taken from the U.S. Census Bureau for Coconino County, Arizona.

Coconino County, Arizona population in 2010: 134,421
Coconino County, Arizona population in 2000: 116,320
Percent change in population: +16%
Size of county: 18,661 mi^2
Current Population Density: 7 people/mi^2

The population in Coconino County has grown between 2000 and 2010 by about 16 percent. However, the county is very sparsely populated. Most of the population in Coconino County is centered in or around Flagstaff (population 65,870 in 2010), Sedona, and Williams in the southern part of the county approximately 130 miles south of NGS. NGS is located in the more sparsely populated northern part of Coconino County. Page (population 7,247 in 2010) is the largest population center in the northern part of Coconino County. Page itself has had a six percent population growth between 2000 and 2010. The RCTS Project itself is not projected to increase economic growth in Coconino County. After review of this information, we have determined that there are no economic growth concerns due to the RCTS Project because the population in the area surrounding NGS is sparse and future economic growth is not expected to impact ambient air quality.

C. Equivalent Control Technologies

40 CFR 49.154(c)(4) requires that the reviewing authority assure that each affected emissions unit will comply will all requirements of 40 CFR Parts 60, 61, and 63 (NSPS/NESHAPS), as well as any Federal or Tribal Implementation Plans that apply to the unit.

As discussed above in Section III.C, there are currently two FIPs codified at 40 CFR 49.5513(a) – (i) and 49.5513(j) that apply to NGS. These FIPs contain emissions limits for criteria pollutants and also include limitations on dust emissions at 40 CFR 49.5513(d)(3). Under that provision, SRP was required to submit a Dust Control Plan for NGS to EPA outlining dust suppression methods for controlling dust from existing coal handling and storage facilities, fly ash handling and storage, and road sweeping activities. The Dust Control Plan has been included as an attachment to the most recent draft title V permit proposed by NNEPA in September 2015. SRP is implementing a variety of dust control measures at NGS. We have examined these dust control techniques for the CTR of emissions associated with the RCTS Project.

The proposed increase in emissions due to the RCTS is primarily a result of increased truck delivery traffic on existing unpaved roads at NGS. There will also be small increases in emissions from the new dust collectors to be installed on the RTCS, new baghouses associated with CKD storage silos and day bins and very small increases from Units 1, 2, and 3 due to the increased ash content of the coal following the application of CKD. However, SRP is not proposing to change the existing emission limits

for Units 1, 2, and 3. Therefore, the CTR will focus on evaluation of emission limits for dust originating from unpaved roads, dust collectors, and baghouses.

SRP mitigates fugitive dust emissions at NGS due to truck delivery traffic on existing unpaved roads at NGS by at least one of the following methods: applying daily water sprays, observing truck speed limits, restricting truck traffic flow, applying a gravel surface, and chemical stabilization of the road surface. SRP also mitigates dust emissions from existing emission units, including coal handling and lime storage silos. Existing coal handling operations are controlled by fabric filter dust collectors. Weekly visible emissions tests are conducted at coal handling dust collectors. If visible emissions are detected, then opacity readings conducted in accordance with EPA Method 9 are made and corrective action is taken within 24 hours to ensure that no visible emissions are detected. Limestone storage silos at NGS are similarly controlled by baghouses and subject to a requirement for weekly visible emissions tests as the coal handling dust collectors.

In this minor NSR permit, we are proposing to require SRP to limit the VMT for truck deliveries of CKD and additional calcium bromide, to water on roadways used for truck deliveries, as well as mitigate visible emissions from the baghouses and dust collectors. The RCTS Project is not expected to result in any local air quality concerns and there are not any economic growth concerns. Therefore, we are proposing that the control technologies described above which are currently in use at NGS would be sufficient to protect ambient air quality from further impacts due to the proposed RCTS Project.

D. Emission Limits Determination

In our CTR for the proposed RCTS Project, we have determined that the control measures equivalent to those used at comparable existing emission units at NGS are sufficient for the control of emission increases from new emission units at the RCTS Project. To control emissions from unpaved roads due to increased CKD and calcium bromide truck delivery traffic, we are proposing that an operational limit on VMT in a rolling 12-month period is the most legally and practicably enforceable control measure. EPA is proposing to find that 720 VMT for CKD deliveries and that 70 VMT for calcium bromide deliveries are appropriate limits for any rolling 12-month period. SRP will be required to record the number of VMT for deliveries of each additive. In addition to limiting VMT for truck delivery traffic, we will require water spraying to the extent necessary to prevent fugitive dust emissions from unpaved roads which exceed 20 percent opacity as measured using EPA Method 9. This opacity limit is consistent with that imposed on other activities at NGS through the facility's title V permit. The potential to emit calculations for fugitive dust emissions from unpaved roads due to the proposed RCTS Project are based on these proposed limits for VMT and the requirement to water the unpaved roads, assuming a control efficiency of 50%.

Fugitive dust emissions originating from roadways will also be mitigated by requiring SRP to implement work practice standards for loading of trucks with cement kiln dust in order to ensure that spillage or loss of material is minimized. If any spillage of cement kiln dust occurs on the roadway, it shall be cleaned up immediately. These work practice standards are consistent with those required at similar facilities in the region.

We have determined that fabric filter dust collectors and baghouses proposed by SRP are sufficient control technology for the control of particulate matter emissions, including PM_{10}, from the RCTS, as

well as for controlling the CKD storage silos and day bins. To help control emissions from dust collectors and baghouses associated with the proposed RCTS Project, we are proposing that a weekly emissions test on each emission unit by an individual trained in EPA Method 22 is sufficient to control excessive dust emissions. EPA Method 22 is a qualitative measurement to determine the presence or absence of visible emissions, which does not include the opacity measurement in EPA Method 9. We have concluded that a weekly opacity measurement is not necessary due to the fact that if visible emissions are detected during these weekly visible emissions tests, regardless of opacity, corrective action will be required within 24 hours to eliminate the presence of visible emissions.

In addition to weekly visible emissions tests, we are proposing to require that SRP inspect and/or replace bags or filters for baghouses or dust collectors as often as necessary to ensure proper operation or more often as indicated by pressure differential readings or other indicators of filter failure. Baghouses and dust collectors are typically equipped with pressure differential monitors which indicate if the equipment is functioning properly or needs to be cleaned or replaced. SRP must keep an adequate supply of replacement bags and filters on site so that they may be replaced immediately upon the detection of failure. These monitoring techniques are consistent with those required for similar equipment throughout the country and are necessary to ensure that equipment is functioning properly and excess emissions of particulate matter are prevented.

VIII. Listed Species-related Requirements

EPA is responsible for complying with ESA Section 7 requirements with respect to federal Tribal Minor NSR permitting, and is the lead federal agency for Section 7(a)(2) compliance for the RCTS Project. EPA has determined that the proposed action on SRP's Tribal Minor NSR permit application for the RCTS Project is consistent with the substantive and procedural requirements of the ESA.

On November 20, 2015, EPA initially sought concurrence from the Arizona U.S. Fish and Wildlife Service (Service) in the form of a letter for its finding that the RCTS Project may affect, but is not likely to adversely affect, any federally-listed endangered or threatened species or designated critical habitat for such species. However, after subsequent telephone conversations with the Service, EPA determined that there would be no effect due to the RCTS Project on any federally-listed endangered or threatened species or critical habitat for such species. The Service wrote to EPA Region 9 in concurrence with this finding on December 18, 2015.

Based on the information provided with SRP's Tribal Minor NSR permit application for the RCTS Project, including the PM_{10} modeling AQIA, the 2008 ESA Analysis, our recent communications with the Service concerning the RCTS Project, the fact that the construction and operation of the RCTS Project will occur solely within the existing boundary of the facility, EPA has concluded that our proposed Tribal Minor NSR permit action for the project, specifically including consideration of the RCTS Project's increase in PM and PM_{10} emissions will have no effect on any federally-listed threatened or endangered species or designated critical habitat for such species, and no further action is necessary in accordance with 50 CFR 402.13(a).

IX. Historic Properties-related Requirements

EPA is responsible, as the lead federal agency for the RCTS Project, for complying with the requirements under Section 106 of the National Historic Preservation Act by initiating consultation with the Navajo Nation Tribal Historic Preservation Officer, an undertaking, in accordance with 36 CFR 800.3. EPA initiated consultation with the Navajo Nation Historic Preservation Officer in writing on October 23, 2015.

The construction and operation of the NGS RCTS Project is considered a minor permit action under the Tribal NSR program and will be adding the RCTS to the existing coal handling operation. The effects of the proposed construction and operation will occur only within the existing footprint of the NGS. As such, the proposed area of potential effects (APE) includes the existing footprint of the NGS power plant. In addition, the increases in emissions due to this project do not exceed SILs beyond the existing facility boundary. Therefore, EPA expects no effects due to this proposed permit action on any historic properties or cultural resources which may exist outside the NGS facility footprint.

EPA was advised by the Navajo Nation Tribal Historic Preservation Officer that the NGS facility itself is eligible for inclusion in the National Register of Historic Places. NGS has been in existence since the early 1970's and has been an integral part of the economy and community of Navajo Nation since that time.

The area in which the construction of the NGS RCTS Project and associated infrastructure, such as the CKD storage silos and new coal feed belt conveyors, is within the built-up environment of the power plant. The area of the facility footprint has been mechanically excavated and leveled and contains an established complex of structures, roads, parking areas, and electrical lines to the degree that the area no longer resembles natural conditions.

The onsite construction and operation of the NGS RCTS Project will not diminish the integrity of the location, design, setting, materials, workmanship, feeling, or association of the NGS facility. While the undertaking will result in additional equipment at the plant, these changes are expected to be minimal and will not change the overall significance of NGS to the Navajo Nation.

Emissions of PM, PM_{10}, and $PM_{2.5}$ associated with the NGS RCTS Project have the potential to impact visibility in the nearby area. Reduced visibility could adversely affect visual elements of NGS and the surrounding area. As such, EPA evaluated visibility impacts associated with the RCTS Project. EPA has determined that air impacts due to increased PM, PM_{10}, and $PM_{2.5}$ emissions do not exceed the SILs or the NAAQS at the facility boundary. Therefore, there will be no effects due to the RCTS Project on the visibility of the facility or the surrounding area.

X. Environmental Justice Analysis

On February 11, 1994, the President issued Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The Executive Order calls on each federal agency to make environmental justice a part of its mission by "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations."

The EPA defines "Environmental Justice" to include meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices. The EPA's goal is to address the needs of overburdened populations or communities to participate in the permitting process. *Overburdened* is used to describe the minority, low-income, tribal and indigenous populations or communities in the United States that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards.

Based on the findings described in the memorandum dated November 24, 2015, "Navajo Nation Indian Reservation; Salt River Project, Navajo Generating Station Refined Coal Treatment System; Environmental Justice," we conclude that issuance of this minor NSR permit is not expected to have disproportionately high or adverse human health effects on overburdened communities in the vicinity of the facility on the Navajo Nation Reservation or in surrounding areas.

This discussion describes the EPA's efforts to identify potentially overburdened communities and assess potential effects in connection with issuing this proposed minor NSR permit for the RCTS Project at NGS.

A. Environmental Impacts to Potentially Overburdened Communities

This minor NSR permit action authorizes the construction of new equipment and changes in operational standards which will cause an increase in air emissions of particulate matter at the NGS facility. The increased air emissions at the existing facility will not contribute to or cause any violation of the NAAQS. All emissions due to the RTCS Project will be well controlled at all times and subject to federally enforceable permit conditions. This permit action will have no adverse ambient air quality impacts.

Furthermore, the existing PSD permit that was issued in 2008 contains provisions stating, "*At all times, including periods of startup, shutdown and malfunction, Permittee shall, to the extent practicable, maintain and operate the facility including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions,*" and "*Permittee shall construct and operate this project in compliance with this PSD Permit, the application on which this Permit is based, and all other applicable federal, state, and local air quality regulations. This PSD Permit does not release the Permittee from any liability for compliance with other applicable federal, state and local environmental laws and regulations, including the Clean Air Act.*" Noncompliance with these permit provisions is a violation of the permit and is grounds for enforcement action and for permit termination or revocation. As a result, the EPA concludes that proposed issuance of this minor NSR permit and incorporating its conditions into the existing PSD permit will not have disproportionately high or adverse human health effects on communities in the vicinity of the Navajo Nation Indian Reservation.

B. Enhanced Public Participation

Given the presence of potentially overburdened communities in the vicinity of the NGS facility, we are providing an enhanced public participation process for this permit.

1. The minor NSR permit application was submitted to both the EPA and NNEPA per the application instructions (see http://www3.epa.gov/air/tribal/tribalnsr.html).
2. NNEPA had 10 business days to communicate to us any preliminary questions and comments on the application.
3. In the event an Air Quality Impacts Analysis is necessary in addition to the initial application, we typically email a copy of that document to NNEPA within 5 business days from the date we receive it. This step was not necessary because the applicant has attached the Air Quality Impact Analysis to the application and submitted it to NNEPA.
4. We are notifying NNEPA, other affected states and tribes, and other interested parties of the public comment period for the proposed minor NSR permit and providing copies of the notice of public comment opportunity to post in various locations on and around the Reservation. We will also notify NNEPA, other affected states and tribes, and other interested parties of the issuance of the final permit.

XI. Authority

The Clean Air Act (CAA) provides EPA with broad authority to protect air resources throughout the nation, including air resources in Indian Country. Unlike States, Indian Tribes are not required to develop CAA new source review (NSR) permitting programs. See, e.g., Indian Tribes: Air Quality Planning and Management, 63 Fed. Reg. 7253 (Feb. 12, 1998) (also known as the Tribal Authority Rule) codified at 40 CFR Part 49. In the absence of an adequately implemented EPA-approved NSR program on the Navajo Nation, EPA has the authority to implement a Federal Implementation Plan (FIP) in order to protect tribal air resources from impacts due to the construction of new or modified stationary sources of air pollutants. In 2011, EPA finalized the Tribal NSR Rule, codified at 40 CFR Part 49, as part of a FIP under the CAA for Indian Country. 76 Fed. Reg. 38748 (July 1, 2011). Among other requirements, the Tribal NSR Rule set forth procedures and terms under which the Agency would administer a minor NSR permitting program in Indian Country. Pursuant to Section 301(d)(4) of the CAA (42 U.S.C. Section 7601(d)), the EPA is authorized to implement the Tribal Minor NSR regulations at 40 CFR 49.151 in Indian Country.

XII. Public Participation

A. Public Comment Period

In accordance with 40 CFR 49.157, we must provide public notice and a 30-day public comment period to ensure that the affected community and the general public have reasonable access to the application and proposed permit information. The application, the proposed permit, this technical support document, and all other supporting materials for the proposed permit are available for review at:

Page Public Library
479 South Lake Powell Blvd
Page, Arizona 86040
(928) 645-4270
Hours: Tues. – Thurs. 9AM – 8PM, Fri. 9AM – 6PM, Sat. 10AM – 6PM, Sun. – Mon. Closed
Contact: Debbie Winlock, Director

LeChee Chapter House
5 miles south on Coppermine Road
LeChee, Arizona 86040
(928) 698-2800

Navajo Nation Environmental Protection Agency
Air Quality Control Program
Route 112, North Bldg. #2837
Fort Defiance, Arizona 86504
(928) 871-6790

EPA Region 9
Air Permits Office (AIR-3)
75 Hawthorne Street
San Francisco, CA 94105
(866) 372-9378

The administrative record for this action is available at http://www.regulations.gov/ under docket ID number EPA-R09-OAR-2016-0026 and is available for review at our office Monday through Friday from 9:00 a.m. to 4:00 p.m. (excluding Federal holidays). Additionally, the proposed permit, technical support document, and supporting material can be reviewed on our website anytime during the public comment period at http://www2.epa.gov/caa-permitting/tribal-nsr-permits-region-9.
Any person may submit written comments on the proposed permit or EPA's finding under this action pursuant to Section 106 of the National Historic Preservation Act during the public comment period. These comments must raise any reasonably ascertainable issues with supporting arguments by the close of the public comment period. Anyone may request a public hearing pursuant to 40 CFR 49.157(c) prior to the end of the public comment period. EPA accepts comments and requests for a public hearing by mail to the EPA address listed above, on http://regulations.gov/ under docket ID number EPA-R09-OAR-2016-0026, and via email to R9AirPermits@epa.gov. In your written comments, please include the subject line: "Comments on Proposed Minor NSR Permit for SRP Navajo Generating Station".

B. Final Minor NSR Permit Action

In accordance with 40 CFR 49.159, a final permit becomes effective 30 days after permit issuance, unless: (1) a later effective date is specified in the permit; or (2) appeal of the final permit is made as detailed in the next section; or (3) we may make the permit effective immediately upon issuance if no comments resulted in a change in the proposed permit or a denial of the permit. We will send notice of the final permit action to any individual who commented on the proposed permit during the public comment period. In addition, we will add the source to a list of final NSR permit actions which is posted on our website at http://www2.epa.gov/caa-permitting/tribal-nsr-permits-region-9. Anyone may request a copy of the final permit at any time by contacting the Region 9 Air Permits Office at R9AirPermits@epa.gov or by calling EPA Region 9's toll-free general information line at (866) 372-9378.

C. Appeals to the Environmental Appeals Board (EAB)

In accordance with 40 CFR 49.159, within 30 days after a final permit decision has been issued, any person who filed comments on the proposed permit or participated in the public hearing may petition the EAB to review any condition of the permit decision. The 30-day period within which a person may request review under this section begins when the Region has fulfilled the notice requirements for the final permit decision. A petition to the EAB is, under Section 307(b) of the Act, a prerequisite to seeking judicial review of the final agency action. For purposes of judicial review, final agency action occurs when we deny or issue a final permit and agency review procedures are exhausted.